Space Weather Forecast

Issued on Friday, 11 February 2022 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Slight chance of Minor Storm early today, then Chance of a G1 tomorrow (12 Feb) or on day 3 (13 Feb). Chance of a Moderate-class flare.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been low over the last 24 hours, with several Common-class flares. The most energetic of these was at 10/0437 UTC from AR2941, a region in the northern hemisphere which is large but magnetically simple. There are three other numbered sunspot regions on the visible disc, and a further three new and yet to be numbered regions. These are all relatively small, magnetically simple and stable.

No Earth directed Coronal Mass Ejections have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind as measured by DSCOVR at L1 was at predominantly slightly elevated levels, peaking at 452 km/s at 10/1429 UTC, then declined to background levels, around 380 km/s, at the very end of the day. The strength of the magnetic field was steady and moderate. The important north-south component initially varied weakly but the fluctuations increased in strength through the morning, then from 10/1315 UTC the component became weakly or moderately southward. Geomagnetic activity was initially Quiet to Unsettled then increased Active to G1/Minor Storm from 10/1500 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms have been observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to remain low through the next four days, with a chance of an isolated Moderate-class flare, mainly from the large region in the northern hemisphere. A new region may rotate onto the visible disc later in the forecast period.

Solar Wind / Geomagnetic Activity: Residual CME effects, from the CME which left the Sun on 06 February arrived at 09/2010UTC, are likely to gradually ease through today. An enhanced solar wind from a coronal hole feature is then expected arrive either later tomorrow (12 Feb) or more likely through day 3 (13 Feb), with speeds eventually reaching 600 km/s. Geomagnetic activity is expected to start Quiet to Active with a Slight Chance of Minor Storms, due to residual CME effects. Quiet to Unsettled conditions are expected tomorrow, increasing Unsettled to Active conditions for days 3 and 4 (13th and 14th) with isolated Minor Storm intervals likely day 3 (13th).

Energetic Particles / Solar Radiation: There is just a slightly raised risk of an S1 radiation storm, if we see a Moderate-class flare from any of the sunspot regions in the western hemisphere.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	30	60	30
Strong	G3	No	1	1	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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